A study of yttria stabilized zirconia sheets fabricated through tape rolling technique

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Abstract The planar SOFC requires dense yttria stabilized zirconia.In the present paper the dense TZP sheets were prepared by tape rolling and appropriate sintering technique. Investigation of density, conductivity, and microstructure as well as XRD of the sintered zirconia sheet through tape rolling was carried out. Large area TZP sheets with a size of 110mm x110mm x 0.15mm was obtained in the present study. The sintered sheet showed a density of 96.1950oC with activity energy of 76.57Jmol-1 at temperature range 500-1000oC. The microstructure observation by SEM showed that the mean grain size were about 1.5. The properties of zirconia sheets fabricated by the present study exhibited a higher density and strength compared with that prepared through tape casting technique. Therefore tape rolling is more favorite technique for preparing the large area electrolyte sheets used for SOFC